

WHAT IS CLAIMED IS:

1. A method of fax transmission over a fax relay network that includes at least an analog portion and a digital portion of the fax relay network, the method comprising:

receiving, at a first relay data gateway that communicatively connects a sending fax machine to the digital portion of the fax relay network, image data from the sending fax machine;

converting the image data into digital data to be sent over the digital portion of the fax relay network;

storing the digitized image data in a buffer at the first relay data gateway;

outputting the digitized image data in accordance with a data rate of the digital portion of the fax relay network, the digitized image data being received by a second relay data gateway on the digital portion of the fax relay network, the second relay data gateway communicatively connecting a receiving fax machine to the digital portion of the fax relay network;

wherein the receiving fax machine operates in an error correction mode in which received data is requested to be resent to the receiving fax machine if errors are detected in the received data.

2. The method according to claim 1, wherein the sending fax machine is communicatively connected to a first public switched telephone network, the first public switched telephone network communicatively connecting the sending fax machine with the first relay data gateway.

3. The method according to claim 2, wherein the receiving fax machine is communicatively connected to a second public switched telephone network, the second public switched telephone network communicatively connecting the receiving fax machine with the second relay data gateway.

4. The method according to claim 1, wherein the image data received by the first relay data gateway is converted from pulse-code-modulated format to digital format, by the first relay data gateway, and

wherein the digital data received by the second relay data gateway is converted from digital format to pulse-code-modulated format, by the second relay data gateway.

5. A method of fax transmission over a fax relay network that includes at least a wideband portion and a narrowband portion, the method comprising:

receiving, at a first relay data gateway that communicatively connects a sending fax machine to the narrowband portion of the fax relay network, image data from the sending fax machine;

storing the image data in a buffer at the first relay data gateway;

outputting the image data in accordance with a data throughput rate of the narrowband portion of the fax relay network, the image data being received by a second data gateway on the narrowband portion of the fax relay network, the second data gateway communicatively connecting a receiving fax machine to the narrowband portion of the fax relay network;

determining an amount of data stored in the buffer at the first relay data gateway; and

if the determination made of the amount of data stored in the buffer is that the amount of data stored in the buffer is greater than a particular amount of data, sending a data resend signal to the sending fax machine,

wherein the sending fax machine operates in an error correction mode in which a data frame is resent upon receipt of a signal to resend the data frame.

6. The method according to claim 5, wherein the sending fax machine is communicatively connected to one of a first public switched telephone network and a first private branch exchange, the one of the first public switched telephone network and the first private branch exchange communicatively connecting the sending fax machine with the first relay data gateway.

7. The method according to claim 6, wherein the receiving fax machine is communicatively connected to one of a second public switched telephone network and a second private branch exchange, the one of the second public switched telephone network and the second private branch exchange communicatively connecting the receiving fax machine with the second relay data gateway.

8. The method according to claim 5, wherein the narrowband portion is a digital network.

9. The method according to claim 8, wherein the wideband portion is an analog network.

10. The method according to claim 9, wherein the image data received by the first relay data gateway is converted from pulse-code-modulated format to digital format, by the first relay data gateway, and

wherein the digital data received by the second relay data gateway is converted from digital format to pulse-code-modulated format, by the second relay data gateway.

11. A method of fax transmission over a fax relay network that includes at least an analog portion and a digital portion of the fax relay network, the method comprising:

receiving, at a first relay data gateway that communicatively connects a sending fax machine to the digital portion of the fax relay network, image data from the sending fax machine;

converting the image data into digital data to be sent over the digital portion of the fax relay network;

storing the digitized image data in a buffer at the first relay data gateway;

outputting the digitized image data in accordance with a data rate of the digital portion of the fax relay network, the digitized image data being received by a second relay data gateway on the digital portion of the fax relay network, the second relay data gateway communicatively connecting a receiving fax machine to the digital portion of the fax relay network;

determining whether a frame of the digitized image data contains errors;

if the determining step is that the frame of the digitized image data contains errors, sending a data resend signal to the first relay data gateway; and

providing the frame of the digitized image data to the second relay data gateway from one of the first relay data gateway and the sending fax machine.

12. The method according to claim 1, wherein the first relay data gateway sends the frame of the digitized image data to the second relay data gateway if the frame of the digitized image data is currently stored at the first relay data gateway, and

wherein the first relay data gateway sends the frame of the digitized image data to the second relay data gateway, after requesting it from the sending fax machine, if the frame of the digitized image data is currently not stored at the first relay data gateway or if the frame of the digitized image data is current stored at the first relay data gateway but is corrupted with errors.

13. An apparatus for facilitating fax transmission between a sending fax machine and a receiving fax machine over a fax relay network, the fax relay network including at least an analog portion and a digital portion, the apparatus comprising:

an input port for receiving image data sent from the sending fax machine;

a conversion unit that converts the image data into digital data to be sent over the digital portion of the fax relay network;

a storing unit that stores the digitized image data and that outputs a signal indicative of a particular amount of data currently stored in the storing unit; and

a control unit for controlling output of the digitized image data stored in the storing unit in accordance with a data rate of the digital portion of the fax relay network and the signal output by the storing unit.

14. The apparatus according to claim 13, wherein, if the amount of data stored in the buffer is greater than a particular amount of data, the control unit sends a data resend signal to the sending fax machine,

wherein the sending fax machine operates in an error correction mode in which data is resent by the sending fax machine upon receipt of the data resend signal.

15. The apparatus according to claim 13, wherein the sending fax machine is communicatively connected to a first public switched telephone network, the first public switched telephone network communicatively connecting the sending fax machine with the apparatus.

16. The apparatus according to claim 15, wherein the conversion unit converts the image data received over the first public switched telephone network and which is PCM-encoded, to digital data to be sent over the digital portion of the fax relay network.

17. An apparatus for facilitating fax transmission between a sending fax machine and a receiving fax machine over a fax relay network, the fax relay network including at least a first network portion and a second network portion, the apparatus comprising:

an input port for receiving image data sent from the sending fax machine;

a storing unit that stores the image data and that outputs a signal indicative of a particular amount of data currently stored in the storing unit; and

a control unit for controlling output of the image data stored in the storing unit in accordance with a data rate of the second network portion of the fax relay network and the signal output by the storing unit.

18. The apparatus according to claim 17, wherein, if the amount of data stored in the storing unit is greater than a particular amount of data, the control unit sends a data resend signal to the sending fax machine,

wherein the sending fax machine operates in an error correction mode in which data is resent by the sending fax machine upon receipt of the data resend signal.

19. The apparatus according to claim 17, wherein the sending fax machine is communicatively connected to a first public switched telephone network, the first public switched telephone network communicatively connecting the sending fax machine with the apparatus.

20. The apparatus according to claim 17, wherein the first network portion is a network in which PCM-encoded signals are sent therethrough, and wherein the second network portion is a digital network in which digitized packets of data are sent therethrough.

21. An apparatus for facilitating fax transmission between a sending fax machine and a receiving fax machine over a fax relay network, the fax relay network including at least an analog portion and a digital portion, the apparatus comprising:

input means for receiving image data sent from the sending fax machine;

conversion means for converting the image data into digital data to be sent over the digital portion of the fax relay network;

storing means for storing the digitized image data and that outputs a signal indicative of a particular amount of data currently stored in the storing means; and

controlling means for controlling output of the digitized image data stored in the storing means in accordance with a data rate of the digital portion of the fax relay network and the signal output by the storing means.

22. The apparatus according to claim 21, wherein, if the amount of data stored in the storing means is greater than a particular amount of data, the controlling means sends a data resend signal to the sending fax machine,

wherein the sending fax machine operates in an error correction mode in which data is resent by the sending fax machine upon receipt of the data resend signal.

23. The apparatus according to claim 21, wherein the sending fax machine is communicatively connected to a first public switched telephone network, the first public switched telephone network communicatively connecting the sending fax machine with the apparatus.

24. The apparatus according to claim 21, wherein the conversion means converts the image data received over the first public switched telephone network and which is PCM-encoded, to digital data to be sent over the digital portion of the fax relay network.

25. An apparatus for facilitating fax transmission between a sending fax machine and a receiving fax machine over a fax relay network, the fax relay network including at least a first network portion and a second network portion, the apparatus comprising:

input means for receiving image data sent from the sending fax machine;



storing unit for storing the image data and that outputs a signal indicative of a particular amount of data currently stored in the storing means; and

controlling means for controlling output of the image data stored in the storing unit in accordance with a data rate of the second network portion of the fax relay network and the signal output by the storing means.

26. The apparatus according to claim 25, wherein, if the amount of data stored in the storing unit is greater than a particular amount of data, the control unit sends a data resend signal to the sending fax machine,

wherein the sending fax machine operates in an error correction mode in which data is resent by the sending fax machine upon receipt of the data resend signal.

27. The apparatus according to claim 25, wherein the sending fax machine is communicatively connected to a first public switched telephone network, the first public switched telephone network communicatively connecting the sending fax machine with the apparatus.

28. The apparatus according to claim 25, wherein the first network portion is a network in which PCM-encoded signals are sent therethrough, and wherein the second network portion is a digital network in which digitized packets of data are sent therethrough.